

Application Serial No.: 10/750,637
Applicant(s): Singh et al.

Docket No.: N.C. 84,598

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

Claim 1 (currently amended): A bioactive catalytic material for providing protection against chemical agents comprising:

(a) at least one enzyme to degrade the chemical agent immobilized within at least one polyelectrolyte selected from the group consisting of polyethyleneimine (PEI), polyacrylic acid (PAA), polystyrene sulfonate (PSS), polydiallyl dimethyl ammonium chloride (PDAA), polyvinylpyridine (PVP), polyvinyl sulfate (PVS), polyallyl amine hydrochloride (PAH) and combinations thereof; and

(b) a polymerized end-capping agent selected from the group consisting of 1,2-dihydroxypropyl methacrylate (DHPM), 1,2-dihydroxypropyl 4-vinylbenzyl ether (DHPVB), N-[3-trimethoxysilyl]propyl]ethylenediamine (TMSED), and combinations thereof.

Claim 2 (original) The bioactive catalytic material of claim 1 additionally comprising metal chelated catalytic particles immobilized within said at least one polyelectrolyte.

Claim 3 (original) The bioactive catalytic material of claim 2 wherein said metal chelated catalytic particles are selected from the group consisting of metal chelated (EDA-Cu²⁺) polymer, silica particles, and combinations thereof.

Claim 4 (original) The bioactive catalytic material of claim 1 additionally comprising adsorbent particles immobilized within said at least one polyelectrolyte.

Claim 5 (original) The bioactive catalytic material of claim 4 wherein said adsorbent particles are functional catalytic particles made by incorporating quaternary ammonium surfactant to silica microparticles.

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Claim 6 (original) The bioactive catalytic material of claim 1 wherein the at least one enzyme is selected from the group consisting of organophosphorous hydrolase (OPH), organophosphorous acid anhydrolase (OPAA), DFPase, phosphotriesterases, and combinations thereof.

Claim 7 (currently amended) The bioactive catalytic material of claim 1 wherein said at least one polyelectrolyte is selected from the group consisting of ~~branched or linear polyethyleneimine (PEI), polyacrylic acid (PAA), polystyrene sulfonate (PSS), polydiallyl dimethyl ammonium chloride (PDAA),~~ phosphonate, sulfonate, carboxylate, sulfate, phosphate, alkylamine, alkylammonium, quaternary pyridinium, and pyridinium ~~their chemically altered derivatives,~~ and combinations thereof.

Claim 8 (canceled)

Claim 9 (canceled)

Claim 10 (currently amended) A bioactive catalytic material for providing protection against chemical agents comprising:

- (c) enzyme-coated catalytic particles;
- (d) metal-chelated catalytic particles selected from the group consisting of metal chelated (EDA-Cu²⁺) polymer, silica particles, and combinations thereof;
- (e) functionalized catalytic particles made by incorporating quaternary ammonium surfactant to silica microparticles;
- (f) polyelectrolytes to hold the enzyme-coated, metal-chelated, and functionalized catalytic particles together wherein said polyelectrolytes are selected from the group consisting of branched or linear polyethyleneimine (PEI), polyacrylic acid (PAA), polystyrene sulfonate (PSS), polydiallyl dimethyl ammonium chloride (PDAA), and combinations thereof; and
- (g) a polymerized end-capping agent selected from the group consisting of 1,2-dihydroxypropyl methacrylate (DHPM), 1,2-dihydroxypropyl 4-vinylbenzyl ether (DHPVB), N-[3-trimethoxysilyl]propyl]ethylenediamine (TMSED), and combinations thereof.

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Claim 11 (original) The bioactive catalytic material of claim 10 wherein the enzyme-coated particles are selected from the group consisting of organophosphorous hydrolase (OPH), organophosphorous acid anhydrolase (OPAA), DFPase, phosphotriesterases, and combinations thereof.

Claim 12 (canceled)

Claim 13 (canceled)

Claim 14 (canceled)

Claim 15 (canceled)

Claim 16 (canceled)

Claims 17-25 (withdrawn)